

My name:.....

My teacher for transition day:.....



Year 6 into Year 7

# Transition Day Booklet in Science

at Oakgrove Secondary School



Mrs O'Donnell – KS3 Science Coordinator

## **Contents of Science transition booklet:**

1. General questions
2. Hazard symbols
3. Equipment/apparatus
4. Units of measurement
5. Taking measurements
6. Variables in a Scientific investigation
7. Science glossary phonics
8. Science word search
9. Science anagrams

## Questions to get us started.....

What does "Science" mean to you?

Write your answer here....

What does "Biology" mean to you?

Write your answer here....

What does "Chemistry" mean to you?

Write your answer here....

What does "Physics" mean to you?

Write your answer here....








What do you like about Science? What would you like to learn about?

Write your answer here....

## Hazard symbols

Hazard symbols gives us information in a picture form about a danger.

Task: Read the description, then match the symbol to the description (from symbols B-G). The first one has been done for you (Symbol A is 1. Corrosive).

	Symbol	Description
A		<b>1. Corrosive</b> Attacks and destroys living tissues, such as skin and eyes
B		<b>2. Substance is an Irritant or is Harmful</b> Not corrosive but will make the skin red or blister
C		<b>3. Highly flammable</b> Catches fire easily
D		<b>4. Gas Cylinders</b> Compressed gas
E		<b>5. Environmentally Damaging</b> Substances that can damage the environment if released
F		<b>6. Long term Health Hazard</b> Substances that can attack organs in the body. Cancer causing substances
G		<b>7. Explosive</b> Substances that can self-react or detonate easily





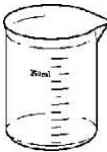










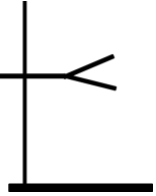
ANSWERS: A = 1; B = 2; C = 3; D = 4; E = 5; F = 6; G = 7

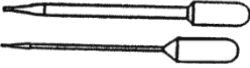



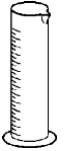

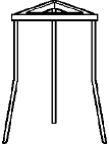
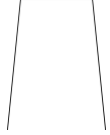

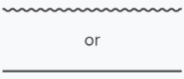
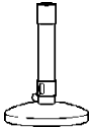


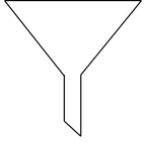


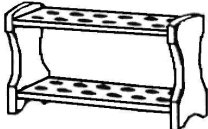





## Equipment (also called apparatus)

Usually in Science we draw diagrams of apparatus rather than pictures.

Diagrams are easier to draw, and make it easier to see how the apparatus is joined together.

Task 1: Complete the table by describing the purpose of each piece of equipment. (Use the clip to help with some pieces of equipment below). <https://www.youtube.com/watch?v=chODOKSPJS4>

Equipment/apparatus	Name	Diagram	What it is used for
	Test tube		
	Boiling tube		
	Beaker		
	Conical flask (i.e. cone-shaped)		
	Heat proof mat		
	Tongs		
	Mortar and pestle		
	Stand boss and clamp		

	Pipette		
	Stirring rod		
	Measuring cylinder		
	Tripod		
	Gauze		
	Bunsen burner		
	Filter funnel (with paper)		
	Thermometer		
	Test tube rack		
	Evaporating basin		
	Spatula		

Task 2: Now that you have written what the equipment is used for, draw a piece of equipment as a diagram and ask someone to name the equipment (just like in Pictionary when you draw an object and your partner guesses what it is).

## Units of measurement

Any quantity (number) should have a unit of measurement written afterward. *For example: 1s (“1” is the quantity; “s” is the unit of measurement).*

This keep things clear and stops confusion with what the quantity (number) means. *For example: it took 20 to boil the water.*

*Does this mean 20 seconds, 20 minutes, or 20 hours?*

So, whenever you measure something in Science, you will write the number followed by a unit of measurement.

Here are some examples of units of measurement:

Quantity being measured	Name of unit	Symbol of unit
length	metre	m
mass	kilogram	kg
time	second	s
force	Newton	N
temperature	degrees Celsius	°C
speed	metres per second	m/s
area	square metres	m <sup>2</sup>
volume	cubic metres	m <sup>3</sup>

- A student measured the mass of an apple on a balance (weighing scales). What unit of measurement should follow 0.137.....?
- A student measured the length of his desk. What unit of measurement should follow 1.2.....?
- A student measured the volume of water in a cup. What unit of measurement should follow 300.....?
- A student measured how long it would take to boil the kettle with 1 cup of water in it. What unit of measurement should follow 59.....?

Answers = a) kg; b) m; c) m<sup>3</sup>; d) s

## **Units of measurement Prefixes**

Sometimes the standard units of measurement are not a useful size to use for quantities. To get around this we use bigger or smaller versions of the unit of measurement.

*For example: 0.137kg would be more appropriate to write as 137g*

Therefore an extra part is added to the unit to show when we are using bigger or smaller versions. This is called a prefix.

Here are some examples of prefixes:

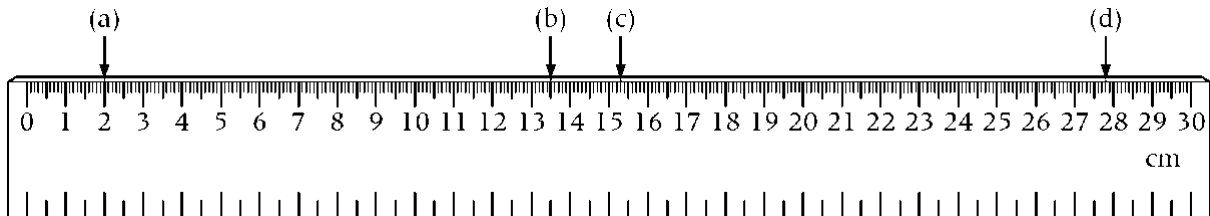
<b>Prefix</b>	<b>Symbol</b>	<b>Meaning</b>	<b>Example</b>
kilo	k	1000	1 kilogram (kg) = 1000 grams (g)
centi	c	1/100	100 centimetres (cm) = 1 metre (m)
milli	m	1/1000	1000 milligrams (mg) = 1 gram (g)
micro	μ	1/1 000 000 (1 millionth)	1,000,000 micrometres (μm) = 1 metre (m)



## Taking measurements

### Measuring Accurately

You must make sure that you measure any readings accurately. You will have used a ruler to measure in primary school. What are the accurate readings on this ruler?

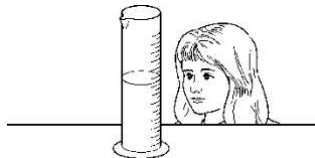


(a) \_\_\_\_\_ (b) \_\_\_\_\_ (c) \_\_\_\_\_ (d) \_\_\_\_\_

### Measuring Liquids

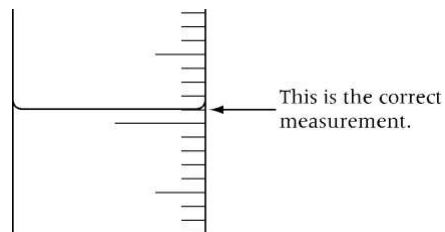
When you need to measure an exact volume of a liquid you use a **measuring cylinder** (if you are at home you can use a measuring jug).

You get a more accurate reading if you bend down so that your eye is level with the liquid in the measuring cylinder.

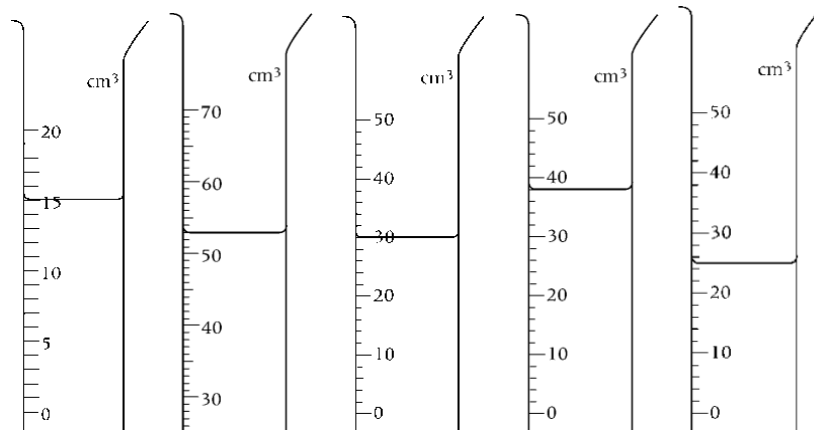


If you look carefully at the liquid in a tube, it seems to go up at the sides of the tube. The curved shape it makes is called the **meniscus**.

You should take your reading from the bottom of the meniscus.



## How much liquid is in these measuring cylinders?



a) \_\_\_\_\_ b) \_\_\_\_\_ c) \_\_\_\_\_ d) \_\_\_\_\_ e) \_\_\_\_\_

**Have a go** at measuring exactly 8cm<sup>3</sup> of water in a measuring cylinder (or measuring jug). You can use a pipette to add water drop by drop until it reaches the meniscus.

You can check how accurate you are at measuring water in a measuring cylinder by checking the mass of your water on a balance.

Weigh a dry empty measuring cylinder then add exactly 14cm<sup>3</sup> water. The mass should be 14g plus the mass of the cylinder.

Cylinder mass \_\_\_\_\_

Water + cylinder mass \_\_\_\_\_

Water mass \_\_\_\_\_

## Measuring Mass

Mass is measured using a balance (weighing scales). It is a digital reading. Kilograms is the standard unit of measurement for mass, however grams can be used for smaller quantities.

**Have a go** at using a balance to record the mass and unit of measurement of 5 objects of your choice.

Remember to add the unit of measurement to the number.

Object 1 \_\_\_\_\_

Object 2 \_\_\_\_\_

Object 3 \_\_\_\_\_

Object 4 \_\_\_\_\_

Object 5 \_\_\_\_\_

### *Using a top-pan balance*

Make sure it shows zero before you start.

Write your answers below.

Make sure you always include the correct unit (grams or kilograms).

Mass of the book = \_\_\_\_\_ grams

Mass of a 10p coin = \_\_\_\_\_

Mass of a 20p coin = \_\_\_\_\_

Mass of 20 paper-clips = \_\_\_\_\_

So, mass of 1 paper-clip = \_\_\_\_\_

Mass of 100 cm<sup>3</sup> of water = \_\_\_\_\_

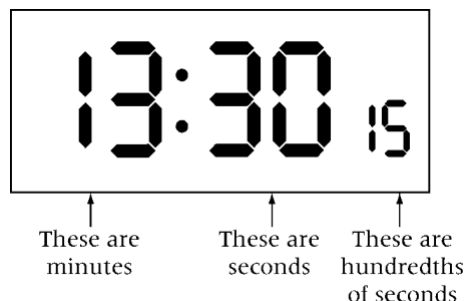


## Measuring Time

Seconds are the standard unit for time, but sometimes we use minutes, hours, or even days, depending on what we are measuring.

Most stop clocks give a reading like this:

The clock is *not* showing 13.30 minutes; it is showing 13 minutes and 30 seconds. They are not the same! 30 seconds is half a minute, so the clock is showing 13.5 minutes.



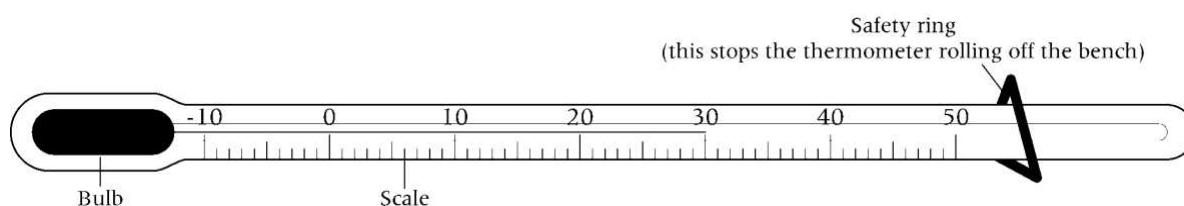
## Measuring Temperature

Thermometers contain a liquid that expands (gets bigger) when it gets hotter. The expanding liquid moves up a narrow tube. We use the **scale** to see how far the liquid has moved, and this tells us the temperature.

The thermometer measures the temperature of the liquid in the **bulb**. If a thermometer is lying on a bench in the lab, it will be reading the temperature of the room.

We measure temperature in degrees Celsius ( $^{\circ}\text{C}$ ). What is the reading on this thermometer?

a) \_\_\_\_\_



You should always aim to leave the thermometer in the liquid until the fluid in the thermometer stops moving to get an accurate reading.

If you have a thermometer like this, **have a go** at measuring the temperature in your lounge, and the temperature of the water from the kitchen tap.

### *Measuring your body*

My height = \_\_\_\_ cm

My mass = \_\_\_\_ kg

My temperature = \_\_\_\_ °C

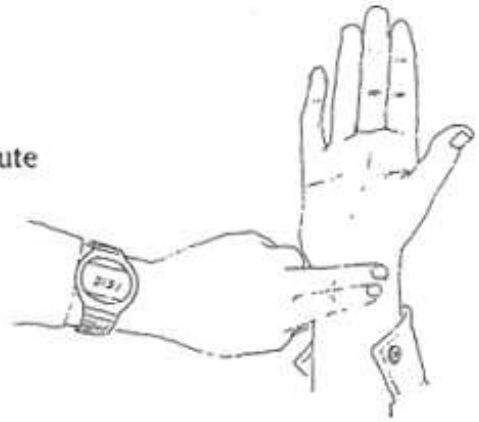
My normal breathing rate = \_\_\_\_ breaths in each minute

My normal pulse rate = \_\_\_\_ beats in each minute

After running on the spot for 1 minute:

My breathing rate = \_\_\_\_ breaths per minute

My pulse rate = \_\_\_\_ beats per minute



## **Variables in a Scientific Investigation**

A Scientific investigation aims to prove an idea.

A variable is a condition to either investigate, measure, or keep the same to produce valid data.

Valid data is how well the data proves what you are investigating.

Task: use the table below to identify the independent variable, dependent variable, and control variable in the investigations the Simpson's are carrying out. Copy and complete the table for each investigation.

Variable name	What it means	What it is in the investigation
Independent	The condition being changed/investigated	
Dependent	The condition being measured	
Control	The conditions being kept the same to produce valid data	

### Investigation 1 - which shoes Homer?



- Homer has just been picked for a bowling team.
- He wants to find the type of shoe which will give him the least amount of slip.
- He has rubber shoes, leather shoes and the plastic shoes.
- He tests each shoe by running 2 metres and then measures how far he slips down the ally.

### Investigation 2 - Bart at the skateboard park



- On the way home from school Bart and Millhouse stop off at the skate park.
- The two of them decide to have a downhill race on their skate boards over a distance of 10 metres.
- For a challenge, Bart thinks it would be a good idea for both of them to put different numbers of school books on their head's.
- They get Lisa to time them and calculate their speed.

### Investigation 3 - Lisa Science project



- Lisa decides to test how the length of rope will affect the number of skips in 10 minutes.
- She has three different sizes of rope - 1 meter, 2 meters and 3 meters.
- She asks Marge to time her using a stopwatch and she asks Bart to count the number of skips.

### Investigation 4 - Maggie, up, up, and away!!

How many balloons does it take for Maggie to fly away?

- Bart and Maggie are playing with balloons.
- Bart blows each balloon up with 4cm<sup>3</sup> of helium.
- He gives them to Maggie one by one and times how long it takes her to start floating off the ground.





## Science Glossary

<b>Word</b>	<b>Phonics</b>	<b>Meaning</b>
	Bun-sen Bern-er	
	Con-kloo-shun	
	Con-tr-ol	
	Dee-pen-dent	
	Ee-kwip-ment	
	Haz-ard	
	In-dee-pen-dent	
	Me-th-odd	
	Ree-ser-ch	
	Ri-sk	
	S-or-s	
	V-air-ee-a-bull	

## Science anagrams

Unscramble each of the clue words.

Copy the letters in the numbered cells to other cells with the same number.

SAEFYT	<input type="text"/> 18
RATRABOLYO	<input type="text"/>
LETSU	<input type="text"/>
ZAARDH	<input type="text"/> 16
RIKS	<input type="text"/>
RONOCLT	<input type="text"/> 11
MUFLHAR	<input type="text"/> 13
VOORIESRC	<input type="text"/> 6
MAFLEALMB	<input type="text"/>
RIRIATNT	<input type="text"/>
GLSOGGE	<input type="text"/> 12
BENUNS	<input type="text"/> 1
BAEREK	<input type="text"/>
RIDTOP	<input type="text"/> 8
CRNLIEDY	<input type="text"/> 2
SELAC	<input type="text"/> 5
METMEENASUR	<input type="text"/> 6
MRTOTMEHEER	<input type="text"/>
HCTAR	<input type="text"/> 7
HPGAR	<input type="text"/>
RARTEMTEPEU	<input type="text"/>
LIABARVES	<input type="text"/> 4
TISNEOGIINAVT	<input type="text"/> 8
SETVIORNOAB	<input type="text"/> 10
NERLINAG	<input type="text"/> 15
KINGNTIH	<input type="text"/> 14
AORINLAELT	<input type="text"/> 17

## Science word search

Z F X H K D H H A R I S K J E  
S E L S A A O P J Y N Y I M X  
N E A A Z R P P R U V W E T P  
R L L A M A M O I R E A I N L  
F E R B R M T F E R S N G A O  
R D T A A A A D U U T O S T S  
N E T E R I N B R L I I A I I  
X U K O M I R E L T G T F R V  
S T B A L O M A Y E A A E R E  
A A J Y E E M I V M T V T I N  
L B C N N B K R A L I R Y S E  
C O N T R O L R E D O E M E S  
C O R R O S I V E H N S J L N  
E R U T A R E P M E T B F U U  
Y W E R A W S S A L G O Y R B

APPARATUS  
CONTROL  
EXPLOSIVE  
GLASSWARE  
INVESTIGATION  
MEASUREMENT  
RULES  
THERMOMETER

BEAKER  
CORROSIVE  
FLAMMABLE  
HARMFUL  
IRRITANT  
OBSERVATION  
SAFETY  
TRIPOD

BUNSEN  
CYLINDER  
FLASK  
HAZARD  
LABORATORY  
RISK  
TEMPERATURE  
VARIABLES

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